

Chapter 11

Maintain and Replace Cooling System Components

This chapter discusses the following topics related to maintaining and replacing the cooling system components:

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Maintain the Fan Trays on page 155

Replace a Fan Tray on page 156

Maintain the Air Filters on page 161

Replace an Air Filter on page 161

Tools and Parts Required

To maintain and replace the cooling system components, you need the following tools and parts:

Phillips (+) screwdriver, number 2

ESD grounding wrist strap

Maintain the Fan Trays

The fan trays each contain multiple fans that work in unison to cool the routing node components. If one fan fails, the host subsystem adjusts the speed of the remaining fans to maintain proper cooling. A red alarm is triggered when a fan fails, and a yellow alarm is triggered when a fan tray is removed.

To display status about the fans, use the following CLI command:

```
user@host> show chassis environment
```

Replace a Fan Tray

The routing node has two front fan trays. The front fan trays install horizontally in the front of the chassis. Each front fan tray contains six fans. The two front fan trays are interchangeable, but the rear fan tray is not interchangeable with the front fan trays. The fan trays are hot-insertable and hot-removable.

To replace a fan tray, use the following procedures:

Remove a Front Fan Tray on page 156

Install a Replacement Front Fan Tray on page 157

Remove the Rear Fan Tray on page 158

Install a Replacement Rear Fan Tray on page 160

Remove a Front Fan Tray

The upper front fan tray is located above the FPC card cage, and the lower front fan tray is located below the air filter. Each fan tray weighs about 18.6 lb (8.4 kg).

To remove a front fan tray, follow this procedure (see Figure 60):

1. Attach an ESD wrist strap to your bare wrist, and connect the wrist strap to one of the ESD points on the chassis.
2. If you are removing the lower fan tray, press the button on the cable management tray, lift the cable management system up and outwards, and lock it in place to access the lower fan tray.
3. Loosen the captive screws on the corners of the fan tray faceplate.
4. Grasp the handles and pull the fan tray halfway out of the chassis.

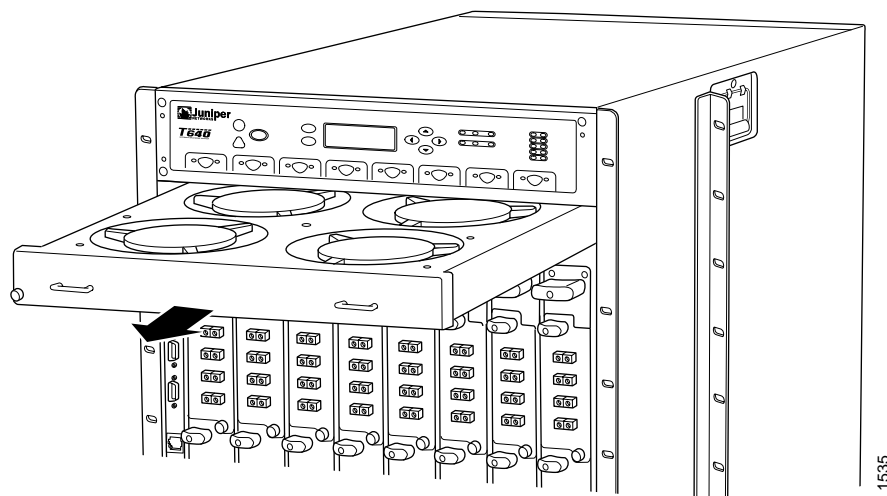


Caution

If the fans are still spinning, avoid putting your fingers or any object into the fan tray as you pull it out. To avoid injury, wait until the fans stop spinning before removing the fan tray.

5. When the fans stop spinning, pull the fan tray completely out of the chassis.

Figure 60: Remove a Front Fan Tray

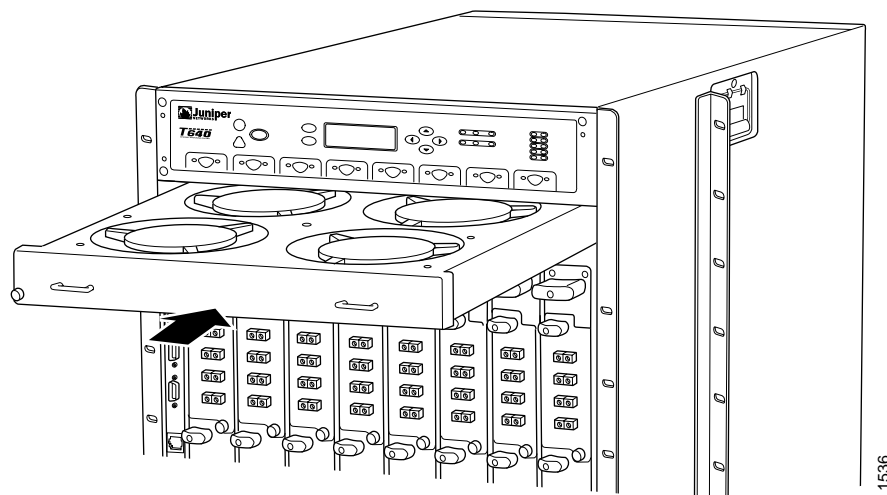


Install a Replacement Front Fan Tray

To install a replacement front fan tray, follow this procedure (see Figure 61):

1. Attach an ESD wrist strap to your bare wrist, and connect the wrist strap to one of the ESD points on the chassis.
2. Grasp the replacement fan tray by the handles and insert it straight into the chassis.
3. Tighten the captive screws on the fan tray faceplate to secure it in the chassis.
4. If you are installing the lower fan tray, unlock the cable management system and lower it to the fully lowered position.

Figure 61: Install a Replacement Front Fan Tray



Remove the Rear Fan Tray

The rear fan tray is mounted vertically on the right side of the rear of the chassis. The rear fan tray contains five fans. The fan tray weighs about 12 lb (5.4 kg).



To maintain proper cooling, do not operate the routing node with the rear fan tray removed for more than one minute.

To remove the rear fan tray, follow this procedure (see Figure 62):

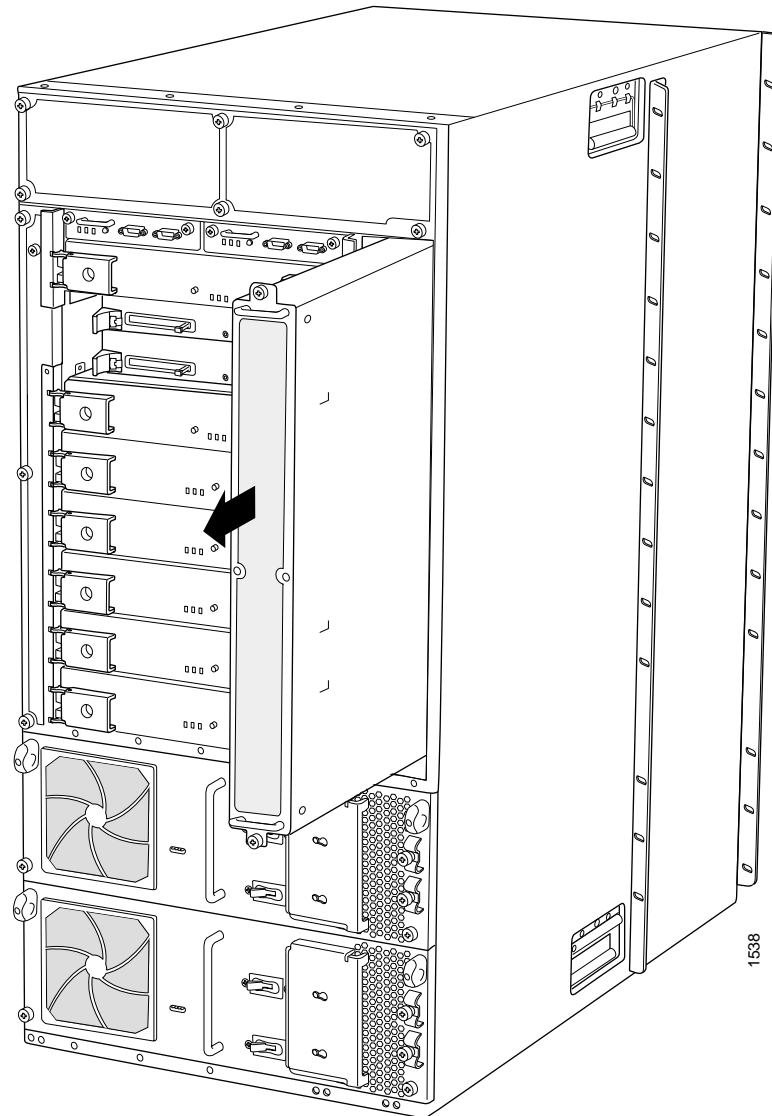
1. Attach an ESD wrist strap to your bare wrist, and connect the wrist strap to one of the ESD points on the chassis.
2. Loosen the captive screws on the top and bottom of the fan tray faceplate.
3. Grasp the handles and pull the fan tray halfway out of the chassis.



If the fans are still spinning, avoid putting your fingers or any object into the fan tray as you pull it out. To avoid injury, wait until the fans stop spinning before removing the fan tray.

4. When the fans stop spinning, pull the fan tray completely out of the chassis.

Figure 62: Remove the Rear Fan Tray

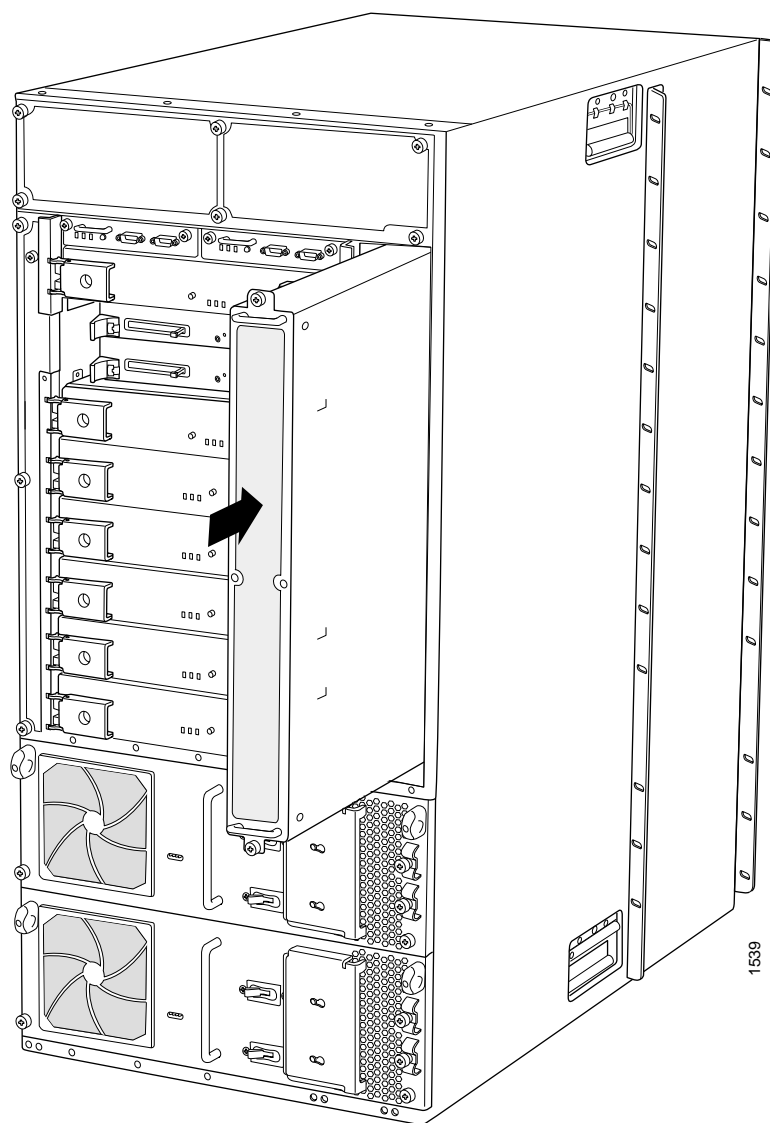


Install a Replacement Rear Fan Tray

To install a replacement rear fan tray, follow this procedure (see Figure 63):

1. Attach an ESD wrist strap to your bare wrist, and connect the wrist strap to one of the ESD points on the chassis.
2. Grasp the replacement fan tray by the handles and insert it straight into the chassis.
3. Tighten the captive screws on the fan tray faceplate to secure it in the chassis.

Figure 63: Install a Replacement Rear Fan Tray



Maintain the Air Filters

Check the air filter regularly for dust and debris, and clean or replace the filter element as needed. The filter element degrades over time, so both filters in use and spares should be replaced periodically. Spare filters should be used within one year of manufacture. Check the date of manufacture printed on the filter.

Store spare filters in a dark, cool, and dry place. Storing the filters at higher temperatures, or where they can be exposed to ultraviolet (UV) radiation, hydrocarbon emissions, or vapors from solvents can significantly reduce filter life.



Caution

Always keep both air filters in place while the routing node is operating. Because the fans are very powerful, they could pull small bits of wire or other materials into the routing node through the unfiltered air intake. This could damage the routing node components.

Replace an Air Filter

The routing node has two air filters. The front air filter installs horizontally below the FPC card cage, and the rear air filter installs vertically at the left side of the rear of the routing node. The air filters are not interchangeable. The air filters are hot-insertable and hot-removable.

To replace an air filter, use the following procedures:

Remove the Front Air Filter on page 161

Install a Replacement Front Air Filter on page 163

Remove the Rear Air Filter on page 163

Install a Replacement Rear Air Filter on page 166

Remove the Front Air Filter

The front air filter is located in the front of the chassis below the FPC card cage. The front air filter weighs less than 1 lb (0.5 kg).

To remove the front air filter, follow this procedure (see Figure 64):

1. Press the button on the cable management tray, lift the cable management system up and outwards, and lock it in the fully raised position to access the front air filter.
2. Loosen the captive screws on the corners of the air filter faceplate.
3. Grasp the handles and pull the air filter straight out of the chassis.
4. Remove the filter element from the air filter frame (see Figure 65).

Figure 64: Remove the Front Air Filter

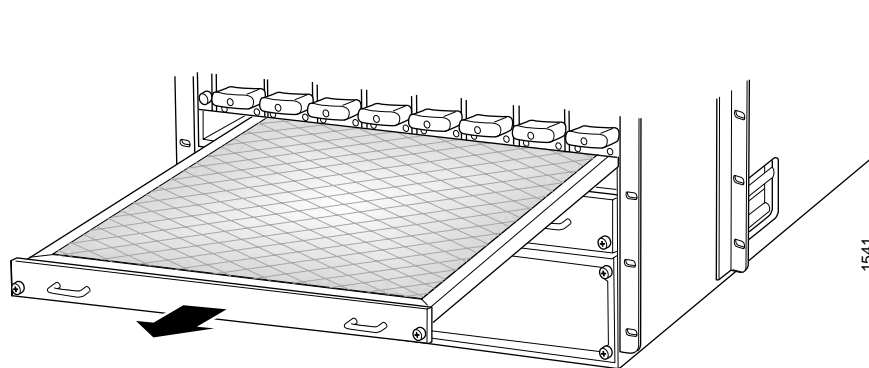
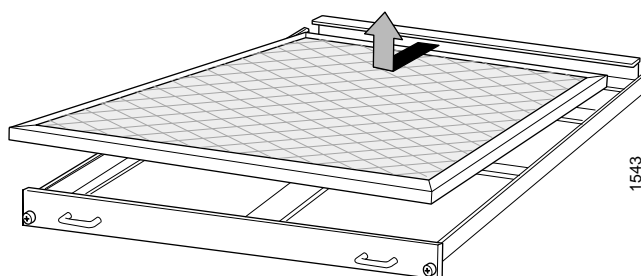


Figure 65: Replace the Front Filter Element

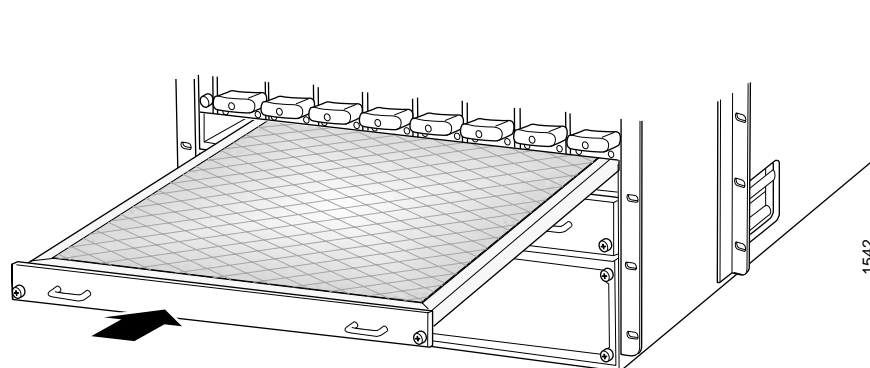


Install a Replacement Front Air Filter

To install a replacement front air filter, follow this procedure (see Figure 66):

1. Insert the replacement filter element into the air filter frame.
2. Grasp the air filter by the handles on its faceplate and slide it straight into the chassis.
3. Tighten the captive screws on the corners of the faceplate.
4. Unlock the cable management system and lower it to the fully lowered position.

Figure 66: Install a Replacement Front Air Filter



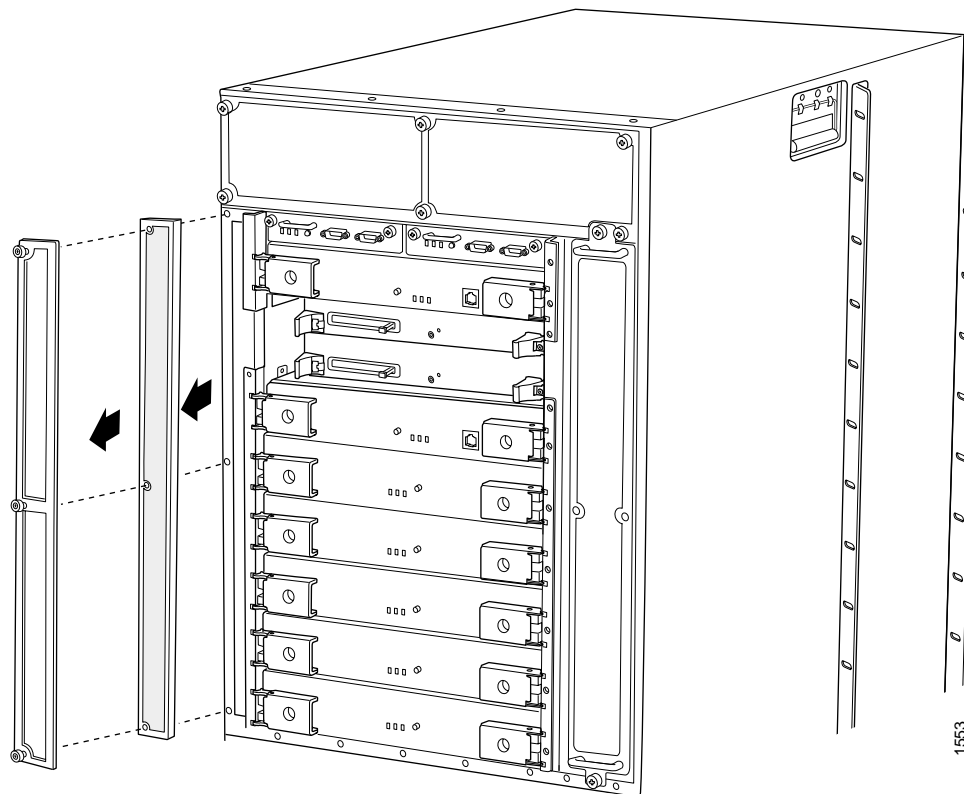
Remove the Rear Air Filter

The rear air filter is located at the left rear edge of the chassis. The front air filter weighs less than 1 lb (0.5 kg).

To remove the rear air filter, follow this procedure (see Figure 67):

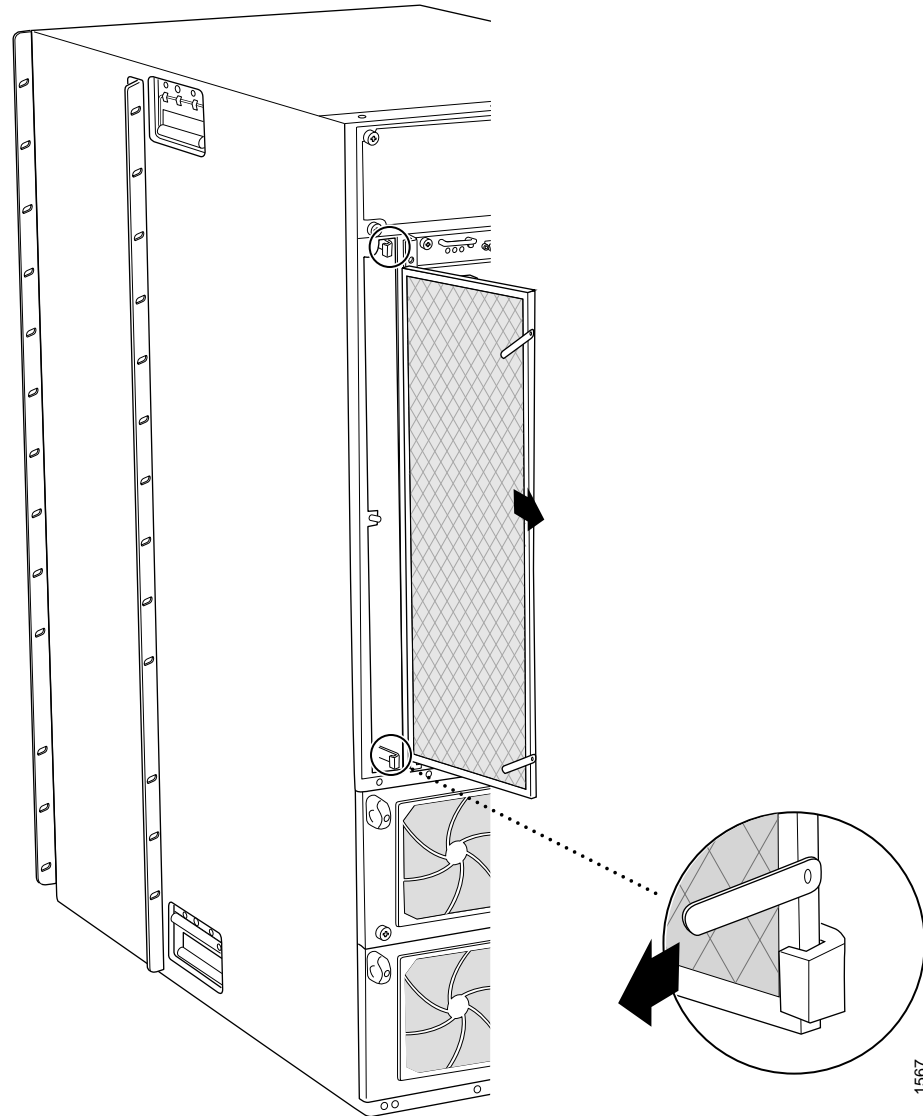
1. Loosen the captive screws at the top and bottom of the air filter cover.
2. Grasp the air filter cover by the captive screws and remove the cover and honeycomb assembly from the chassis.
3. Press the filter inwards until it clears the hooks at the top and bottom of the air filter slot, then push it to the left to unseat it.
4. Move the tabs on the filter to a horizontal position.
5. Grasp the tabs on the filter and carefully pull the filter straight out from the chassis (see Figure 68).

Figure 67: Remove the Rear Air Filter



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Figure 68: Replace the Rear Filter Element



Install a Replacement Rear Air Filter

To install a replacement rear air filter, follow this procedure (see Figure 69):

1. Holding the replacement filter by the tabs, carefully push the filter all the way into the air filter slot.
2. Holding the filter all the way in, push it to the right side of the slot until it clicks into place behind the hooks.
3. Move the tabs to a vertical position.
4. Place the right edge of the honeycomb against the flange of the air filter slot.
5. Line up the holes at the top, center, and bottom of the honeycomb with the pins in the slot and press the honeycomb into place.
6. Replace the air filter cover.
7. Firmly tighten the captive screws at the top and bottom of the filter cover to secure it to the chassis.

Figure 69: Install a Replacement Rear Air Filter

